

What is claimed is:

1. A glass composition comprising the following glass ingredients:

45 to 75 % by weight of  $\text{SiO}_2$ ;

1 to 20 % by weight of  $\text{Al}_2\text{O}_3$ ;

0 to 8 % by weight, zero inclusive, of  $\text{B}_2\text{O}_3$ ;

$\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{B}_2\text{O}_3$  accounting for 60 to 90 % by weight;

a total of 0 to 20 % by weight, zero inclusive, of  $\text{R}_2\text{O}$  compounds, where  $\text{R} = \text{Li}, \text{Na},$   
and  $\text{K}$ ; and

a total of 0 to 15 % by weight, zero inclusive, of  $\text{TiO}_2 + \text{ZrO}_2 + \text{Ln}_x\text{O}_y$ , where  $\text{Ln}_x\text{O}_y$   
represents at least one compound selected from the group consisting of lanthanoid metal  
oxides,  $\text{Y}_2\text{O}_3$ ,  $\text{Nb}_2\text{O}_5$ , and  $\text{Ta}_2\text{O}_5$ .

2. A glass composition as claimed in claim 1, further comprising the following  
glass ingredients:

a total of 12 % or less by weight of one or two or more  $\text{R}'\text{O}$  compounds, where  $\text{R}' =$   
 $\text{Mg}, \text{Ca}, \text{Sr}, \text{Ba},$  and  $\text{Zn}$ .

3. A glass substrate formed of a glass composition comprising the following glass  
ingredients:

45 to 75 % by weight of  $\text{SiO}_2$ ;

1 to 20 % by weight of  $\text{Al}_2\text{O}_3$ ;

0 to 8 % by weight, zero inclusive, of  $\text{B}_2\text{O}_3$ ;

$\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{B}_2\text{O}_3$  accounting for 60 to 90 % by weight;

a total of 0 to 20 % by weight, zero inclusive, of  $\text{R}_2\text{O}$  compounds, where  $\text{R} = \text{Li}, \text{Na},$

and K; and

a total of 0 to 15 % by weight, zero inclusive, of  $\text{TiO}_2 + \text{ZrO}_2 + \text{Ln}_x\text{O}_y$ , where  $\text{Ln}_x\text{O}_y$  represents at least one compound selected from the group consisting of lanthanoid metal oxides,  $\text{Y}_2\text{O}_3$ ,  $\text{Nb}_2\text{O}_5$ , and  $\text{Ta}_2\text{O}_5$ .

4. A glass substrate as claimed in claim 3, further comprising the following glass ingredients:

a total of 12 % or less by weight of one or two or more  $\text{R}'\text{O}$  compounds, where  $\text{R}' = \text{Mg, Ca, Sr, Ba, and Zn}$ .

5. A glass substrate as claimed in claim 3, wherein the glass substrate is not subjected to strengthening.

6. A glass substrate as claimed in claim 3, wherein the glass substrate is a substrate for a magnetic disk.

7. A glass substrate as claimed in claim 3, wherein the glass substrate has a fracture toughness  $K_{\text{Ic}}$  of  $0.90 \text{ MPa} / \text{m}^{1/2}$  or greater.

8. A glass substrate as claimed in claim 3, wherein the glass substrate has  $\text{SiO}_2$  elution A in a range of from 10 to 450 ppb per 2.5-inch disk.

9. A glass substrate as claimed in claim 3, wherein the glass substrate has a fracture toughness  $K_{\text{Ic}}$  of  $0.90 \text{ MPa} / \text{m}^{1/2}$  or greater, and has  $\text{SiO}_2$  elution A in a range of from

10 to 450 ppb per 2.5-inch disk, with a ratio of the SiO<sub>2</sub> elution A to the fracture toughness K<sub>c</sub> in a range of from 3 to 500.

10. A glass substrate as claimed in claim 3, wherein the glass substrate has alkali elution B of 350 ppb or lower per 2.5-inch disk.

11. A glass substrate as claimed in claim 3, wherein the glass substrate is not subjected to strengthening, and has a specific elastic modulus  $E / \rho$  of 30 or higher.

12. A glass substrate as claimed in claim 3, wherein the glass substrate is not subjected to strengthening, and has a Vickers hardness Hv in a range of from 500 to 700.

13. A glass substrate as claimed in claim 3, wherein the glass substrate is not subjected to strengthening, and has a linear thermal expansion coefficient  $\alpha$  in a range of from  $40 \times 10^{-7} / ^\circ\text{C}$  to  $90 \times 10^{-7} / ^\circ\text{C}$ .

14. A glass substrate as claimed in claim 3, wherein the glass substrate exhibits a weight reduction factor lower than 8.0 % when kept in a melted state at 1 500 °C for 24 hours.

15. A glass substrate as claimed in claim 3, wherein the glass substrate has a glass transition temperature T<sub>g</sub> of 600 °C or lower.

16. A glass substrate as claimed in claim 3, wherein the glass substrate has a liquid phase temperature T<sub>L</sub> of 1 300 °C or lower.

17. A glass substrate as claimed in claim 3, wherein a temperature  $T_{\log \eta = 2}$  at which the glass substrate has a melt viscosity of  $\log \eta = 2$  is 1 550 °C or lower.

18. A magnetic disk substrate comprising a glass substrate as claimed in claim 3 and a magnetic film formed on at least one surface thereof.

19. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate further comprises the following glass ingredients:

a total of 12 % or less by weight of one or two or more R'O compounds, where R' = Mg, Ca, Sr, Ba, and Zn.

20. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate is not subjected to strengthening.

21. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate has a fracture toughness  $K_{Ic}$  of 0.90 MPa / m<sup>1/2</sup> or greater.

22. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate has SiO<sub>2</sub> elution A in a range of from 10 to 450 ppb per 2.5-inch disk.

23. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate has a fracture toughness  $K_{Ic}$  of 0.90 MPa / m<sup>1/2</sup> or greater, and has SiO<sub>2</sub> elution A in a range of from 10 to 450 ppb per 2.5-inch disk, with a ratio of the SiO<sub>2</sub> elution A to the fracture

toughness  $K_{IC}$  in a range of from 3 to 500.

24. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate has alkali elution B of 350 ppb or lower per 2.5-inch disk.

25. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate is not subjected to strengthening, and has a specific elastic modulus  $E / \rho$  of 30 or higher.

26. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate is not subjected to strengthening, and has a Vickers hardness  $H_v$  in a range of from 500 to 700.

27. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate is not subjected to strengthening, and has a linear thermal expansion coefficient  $\alpha$  in a range of from  $40 \times 10^{-7} / ^\circ\text{C}$  to  $90 \times 10^{-7} / ^\circ\text{C}$ .

28. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate exhibits a weight reduction factor lower than 8.0 % when kept in a melted state at 1 500  $^\circ\text{C}$  for 24 hours.

29. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate has a glass transition temperature  $T_g$  of 600  $^\circ\text{C}$  or lower.

30. A magnetic disk substrate as claimed in claim 18, wherein the glass substrate has a liquid phase temperature  $T_L$  of 1 300  $^\circ\text{C}$  or lower.

31. A magnetic disk substrate as claimed in claim 18, wherein a temperature  $T_{\log \eta = 2}$  at which the glass substrate has a melt viscosity of  $\log \eta = 2$  is 1 550 °C or lower.